## Alanya Alaaddin Keykubat University | Rafet Kayış Faculty of Engineering **Genetic and Bioengineering Department** 2023-2024 Fall Semester

Syllabus						
Code/Name	SEC 301.2 / Cancer Biology					
Туре	Elective					
Credit/ECTS     5/5       Hour per Week     2 (2+0+0)						
Hour per Week 3 (3+0+0)						
Level/Year Undergraduate/3						
Semester Fall						
Classroom	D305					
Content	Introduction to cancer biology, DNA structure and stability: mutations, repair, and cancer, Regulation of gene expression, epigenetic factors, and cancer, Cell cycle and cancer relationship, Growth inhibition and tumor suppressor genes, Molecular basis of cancer, Signaling pathways in cancer, Stem cells and cancer, Apoptosis, cancer, and control mechanisms, Metastasis, Immune system, infections, and inflammation, Nutrients, hormones, and gene interactions, The cancer industry; drug development and clinical trials, Methods used in cancer treatment and new developments.					
Prerequisites						
Textbooks	<ul> <li>Primary</li> <li>King RJB, Robins B. Cancer Biology. Third edition. Prentice Hall, 2006.</li> <li>Pecorino L. Molecular Biology of Cancer – Mechanisms, Targets &amp; Therapeutics.</li> <li>Oxford University Press, 2008.</li> <li>Weinberg RA. The Biology of Cancer. First edition. Garland Science, 2006.</li> <li>Supplementary</li> <li>Pecorino, L., (2008), Molecular Biology of Cancer: Mechanism, Targets and Therapeutics., 2nd ed., Oxford University Press, UK.</li> <li>Weber, G.F., (2007), Molecular Mechanism of Cancer, e-book, Springer, The Netherlands</li> </ul>					
Objectives	<ul> <li>Topics to be covered include:</li> <li>the basics of cell transformation,</li> <li>oncogenes, tumor suppressor genes, tumor viruses,</li> <li>signal transduction pathways, extracellular environment,</li> <li>cell invasion, cell cycle control and checkpoints, and apoptosis.</li> </ul>					
Course Outcomes	<ul> <li>In this course you will be able to:</li> <li>CO1 Comprehends a general perspective on the biology of cancer.</li> <li>CO2 Defines tumors and cancer as the results of uncontrolled cell growth and division.</li> <li>CO3 Summarize the difference between benign and malignant tumors and cancer.</li> <li>CO4 Explain how cancer spreads in the body.</li> <li>CO5 Analyzes some risk factors for cancer.</li> <li>CO6 Comprehends the cellular and molecular basis for the prevention and treatment of cancer.</li> </ul>					

## Weekly Schedule of Topics

W	Topic
1	Introduction to Cancer Biology
2	DNA structure and stability: mutations, repair, and cancer
3	Regulation of gene expression, epigenetic factors, and cancer
4	Cell cycle and cancer relationship
5	Growth inhibition and tumor suppressor genes

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6	Molecular basis of cancer				
7	Signaling pathways in cancer				
8	Stem cells and cancer				
9	Apoptosis, cancer, and control mechanisms				
10	Metastasis				
11	Immune system, infections, and inflammation				
12	Nutrients, hormones, and gene interactions				
13	13 The cancer industry; drug development and clinical trials				
14	14 Methods used in cancer treatment and new developments				
Professional ContributionTo have knowledge that will allow working in companies or research l working on cancer biology, to be able to design research and projects biology		ratories 1 cancer			

## **Contribution to Program Outcomes\***

	P01	P02	P03	P04	P05	P06	P07	P08	P09	P010	P011
C01	2	2	2	4	2	2	2	2	3	3	4
CO2	2	1	3	3	3	4	3	3	3	0	5
CO3	2	3	2	4	3	4	2	1	2	2	4
C04	3	3	3	2	3	3	1	2	3	2	4
C05	3	1	3	4	3	3	1	3	1	2	3
C06	2	2	2	1	3	4	2	2	2	3	2

\* Contribution Level | 0: None | 1: Very Low | 2: Low | 3: Medium | 4: High | 5: Very High

Special Conditions	• Students work in groups for project and presentations.					
Requirements	Basic knowledge of Cell Biology					
Course Policy	<ul> <li>Be in the class on time.</li> <li>English should always be used to communicate with one another.</li> <li>At least 70% attendance is required, otherwise a grade of DZ will be assigned.</li> </ul>					
Cheating & Plagiarism	<ul> <li>Copying or letting someone copy your work on exams, assignments, or reports is cheating.</li> <li>Cutting and pasting text, figures and tables from web sources or any other electronic source is plagiarism.</li> <li>The consequence of academic dishonesty is to receive a grade of FF for the course.</li> </ul>					
Evaluation	Mid-term Exam Presentation <u>Final Exam</u> Total	30% 20% 50% 100%				
Rubric						
Instructor						

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Room	330	Office Hours	W 13:30-15:30

Prepared by Dr. Ayşe Erdoğan-17.10.2024